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## ECONOMIC ASSUMPTIONS AND ANALYSES

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## 2. ECONOMIC ASSUMPTIONS

### Introduction

Beginning in mid-2000, economic growth decelerated sharply. Over the following half-year manufacturing production declined, the Nation's payrolls grew very little, and the unemployment rate rose. In response to the slowing economy, the Federal Reserve cut the federal funds rate by 2-¾ percentage points during the first half of 2001, the largest reduction in such a short period since 1984. Fiscal policy also shifted to stimulate demand. In June, the President signed the Economic Growth and Tax Relief Reconciliation Act of 2001, which reduced personal income taxes by \$44 billion during the second half of the year, the first installment in a multi-year permanent reduction in income tax liabilities.

Under normal circumstances, the strong monetary and fiscal stimulus either in place or enacted by mid-2001 would have been more than sufficient to reinvigorate the stalled economy. In fact, last spring most forecasters, including the Administration, were predicting that the sluggish growth that began in 2000 would end by late 2001 and the economy would again be growing at a sustainable pace that would keep the unemployment rate from rising further.

However, the normal channels of transmission linking economic policy and economic performance never had a chance to operate. The terrorist attacks of September 11th temporarily shattered consumer and business confidence. Faced with a highly uncertain and much more risky economic environment, consumers, businesses and investors for a brief time became much less willing to undertake the purchases and investments which are needed to achieve sustainable growth.

According to the National Bureau of Economic Research (NBER), the business cycle expansion that began in March 1991 ended in March 2001, six months before the terrorist attacks. The expansion lasted exactly ten years, making it the longest period of continuous economic growth in the Nation's history. In the absence of the terrorist attacks, the longest-running expansion might have continued well into its second decade. As the NBER stated, "Before the attacks, it is possible that the decline in the economy would have been too mild to qualify as a recession. The attacks clearly deepened the contraction and may have been an important factor in turning the episode into a recession."<sup>1</sup>

At the start of 2001, hardly any forecaster expected that the economy would slip into recession within a few months. None did, or could, anticipate the shock to the economy from the terrorist attacks later in the year. Consequently, forecasts of real GDP growth made

in January 2001 turned out to be well above the actual outcome.

The forecasts made in January 2001 by the Administration, the Congressional Budget Office (CBO) and the Blue Chip consensus, an average of prominent private sector forecasts, projected real GDP growth in 2001 would be close to 2.5 percent. Although the official estimate of fourth quarter growth is not yet available, the consensus forecast anticipates that growth in 2001 will be close to 1 percent. The error was especially large for business capital spending. Most forecasters expected an increase in 2001; instead it fell sharply.

The forecasts made in January 2001 by the Administration, the CBO and the Blue Chip consensus for GDP growth in 2002 were all close to 3.5 percent. That is about 2-½ percentage points above the current projections for 2002, which are 0.7 percent in the economic assumptions used in this Budget; 0.8 percent in the January 2002 CBO projections; and 1.0 percent in the January 2002 Blue Chip consensus.

The large over-estimate of real growth during 2001-2002 contributed to a large over-estimate of receipts in FY 2002. Receipts are now expected to be \$177 billion lower than anticipated in the 2002 Budget published in April 2001 due to the weaker economy and related factors, and outlays are expected to be \$20 billion higher. Thus, the budget balance for 2002 has been reduced \$197 billion due to the impacts from the unexpected weak economy. (For further details, see the section below "Sources of Change in the Budget Since Last Year.") Economic-driven misses in budget projections are not unusual, however. The budget balances for 1998 through 2000 were boosted by \$135 billion to \$200 billion each year due to economic and technical factors, relative to the forecast made at the start of each budget year. (For further discussion of the historical record of misses in budget projections and their sources, see Chapter 18, "Comparison of Actual to Estimated Totals for 2001.")

Despite the setback caused by the terrorist attacks, the economy appears to be once again poised to resume sustainable growth in 2002. The Federal Reserve cut the Federal funds rate four times after September 11th, lowering it to just 1-¾ percentage point in early December, the lowest it has been in 40 years. In total during 2001, the Federal Reserve reduced the funds rate by 4-¾ percentage points, which helped support consumer durables spending and residential investment in 2001 and which will stimulate business investment during the recovery this year. Inflation remains low, which will allow the Federal Reserve to ease further if that appears necessary.

Substantially lower energy prices will provide a boost to economic activity. Crude oil prices have fallen nearly

<sup>1</sup>National Bureau of Economic Research, "The NBER's Business-Cycle Dating Procedure", December 13, 2001, page 7.

50 percent since late 2000, with an especially sharp drop after mid-2001. Lower prices for gasoline, heating oil and natural gas act like a tax cut for energy-consuming households and businesses, although this is partly offset by lower incomes for domestic energy producers. The net impact is stimulative because the United States imports a substantial portion of the energy it consumes.

Fiscal policy is also expected to boost growth. The bipartisan economic security package proposes lower personal taxes and increases incentives for business investment. These measures, along with the budget's "automatic stabilizers" such as lower income taxes and increased unemployment insurance payments, will provide additional purchasing power to households and businesses this year.

During each quarter of 2001, businesses cut back on capital spending in response to a "capital overhang" that developed in 2000 following the Y2K surge in spending, the unanticipated slowing of demand here and abroad, and the decline in corporate cash flow. When the economy begins growing again, businesses will have the willingness and ability to invest more in new plant and equipment. Also, businesses liquidated inventories during 2001 to such an extent that they will soon have to step up orders to replenish stocks. For these reasons, the usual dynamics of the business cycle are likely soon to swing from restraining growth to boosting growth. Increased orders for capital equipment and stockbuilding will require increased production, which will require more workers on payrolls, which will generate more incomes, restore confidence, stimulate consumer spending, and, in turn, lead to further increases in business investment. This "virtuous circle" has been the regular sequence of events in past business cycles.

Financial markets are already anticipating faster economic growth this year. The stock market is often a reliable leading signal of future economic activity, and it has risen sharply from its low point on September 21st. By mid-January, the Dow Jones Industrial Average had gained almost 20 percent and the technology-laden NASDAQ 40 percent. In every post-World War II recession, the economy has emerged from recession to expansion a few months after the start of a sustained stock market rally. Bond markets are sending a similar signal. The spread between short and long-term interest rates widened significantly in the final months of 2001, an indication that bond market investors also anticipate faster growth shortly.

Despite the encouraging signals from financial and nonfinancial markets, a strong and sustained expansion is far from assured. The recovery of business investment may be delayed; consumers may yet curtail discretionary spending in the face of uncertain prospects for employment and income; and U.S. exports may be weaker than anticipated as a result of slow growth abroad. In light of these downside risks that might prolong the recession, the Administration endorses the

bipartisan economic security package to insure a quick and successful transition from contraction to expansion.

This chapter begins with a fuller review of recent economic developments and policy actions. The chapter goes on to present the Administration's economic assumptions that underpin the 2003 Budget projections and to compare these with the forecasts of the private sector and the Congressional Budget Office. The economic assumptions are conservative and close to those of the Congressional Budget Office and the consensus of private sector forecasters, both in the near-term and over the Budget horizon to 2012. As such, the Administration's assumptions provide a prudent basis for the budget balance projections. The following sections of the chapter describe how the economic assumptions have been revised since those of the 2002 Budget and how the changes in economic assumptions, policies and technical factors since last year have affected projected budget surpluses. The next section presents cyclical and structural components of the surplus. The chapter concludes with estimates of the sensitivity of the budget to changes in economic assumptions.

### Recent Developments

*The 2000–2001 Economic Slowdown:* The slowdown in the economy's growth rate began in mid-2000, well before the onset of the recession in March 2001. During the second half of 2000, the economy expanded at only a 1.6 percent annual rate, and during the first half of 2001 growth slowed further to a mere 0.8 percent annual pace. A number of factors contributed to the deceleration of economic activity:

- First, from the end of 1995 through mid-2000 real GDP growth was at an unsustainably strong pace, averaging 4.3 percent per year. By mid-2000, it was clear to most observers that growth would have to slow for some period of time to permit the economy to return to its potential level.
- Second, the cost of credit rose during 1999 and the first half of 2000, as the Federal Reserve tightened monetary policy to avoid an acceleration of inflation.
- Third, the stock market fell after March 2000, with an especially pronounced drop for high-tech firms. The loss in equity wealth slowed the growth of consumer spending and raised the cost of capital to business. With the benefit of hindsight, it appears that the stock market at the end of the 1990s had reached unsustainable heights, especially for high-tech firms.
- Fourth, energy prices spiked in 1999 and 2000. The higher energy prices acted like a tax on consumers, leaving them with less income to spend on non-energy goods and services. Profits of non-energy producing businesses were squeezed by the higher costs of production.
- Finally, by late 2000, businesses found themselves with excess fixed capital and unwanted inventories. In response, firms sharply reduced business fixed investment and inventories during 2001.

Despite the equity losses, consumer spending continued to sustain the economy's growth after mid-2000. Consumer spending adjusted for inflation accounts for two-thirds of GDP and residential investment another 4 percent. With 70 percent of the economy growing, albeit at a somewhat slower pace, real GDP continued to expand slowly through the second quarter of 2001. Residential investment also expanded during the period of decelerating GDP growth, spurred by historically low mortgage interest rates. During 2001, the rate on 30-year mortgages averaged 7.0 percent, the lowest level since the 1960s. Housing starts actually increased after mid-2000 and total home sales set a record high in 2001.

The business sector was the major source of restraint responsible for the deceleration of GDP growth. After eight successive years of double-digit growth, real investment in equipment and software slowed sharply beginning in the third quarter of 2000, and declined in each of the next four quarters. The decrease in investment in high-technology equipment was especially pronounced, but spending on other types of equipment and structures also declined. As the economy's growth slowed, excess capacity emerged in many industries and reduced the immediate need for new capital investment to augment capacity. Businesses also sharply reduced their inventory investment during the second half of 2000 and continued to liquidate inventories in 2001 as they sought to bring stocks back in line with weakened sales. Although inventories are a relatively small component of GDP, they are subject to substantial swings that exert a disproportionately large impact on GDP growth around business cycle turning points. Since the middle of 2000, declining inventory investment has reduced real GDP growth by between one-half percentage point and 2-½ percentage points in each quarter. Although the official data are not yet available, inventory liquidation in the fourth quarter of last year appears to have again reduced real GDP growth substantially.

Government purchases added a little less than one-half percentage point to real GDP growth after mid-2000. Virtually all of that modest contribution to growth came from State and local spending; Federal government spending hardly increased. Net exports also had only a small impact on GDP growth after mid-2000. Growth of U.S. exports was hurt by slow growth abroad, while the growth of U.S. imports was restrained by the deceleration of U.S. domestic demand. As a result, the net export balance, which had deteriorated sharply during the last half of the 1990s, hardly changed after mid-2000. The unemployment rate began rising steadily after its cyclical low in October 2000 at 3.9 percent.

*Fiscal Policy:* In keeping with his campaign pledge, soon after the President took office in January 2001 he proposed substantial tax relief for the American people. That goal was achieved with the passage of the Economic Growth and Tax Relief Reconciliation Act (EGTRRA) in June. The Act, which is projected to re-

duce taxes by \$1.24 trillion over 11 years, will enable families to keep more of their income and will provide new incentives to work and save. The bill reduces marginal income tax rates; reduces the "marriage penalty" for most married couples; increases the child and adoption tax credit credits; eliminates the estate tax; and increases the annual contribution limits to IRAs, 401k retirement plans, and educational IRAs. Many of these tax reductions became effective starting in 2001 or 2002 and were phased in over several years.

The tax reduction package was well timed to support a weakened economy. Beginning in July of 2001, 85 million taxpayers received rebate checks totaling \$36 billion. These checks represented a full year's tax reduction from the creation of the new 10 percent tax bracket carved out of the beginning of the 15 percent tax bracket. In addition, beginning July 1st, payroll tax withholding schedules were reduced to reflect the phase-in of the lower marginal income tax rates for those in the 28 percent tax bracket and higher. In January of this year, payroll withholding schedules were lowered to reflect the new 10 percent tax bracket that took the form of a rebate in 2001. All told, the rebate and other withholding changes are estimated to have reduced personal income tax liabilities by \$44 billion in calendar year 2001 and are expected to lower them by \$52 billion in 2002. The lower taxes enable households to increase spending and pay down debt. Adding in all the other major personal income tax reductions, EGTRRA is estimated to reduce taxpayers' 2002 calendar year liabilities by about \$70 billion.

In this Budget, the Administration proposes an economic security package to insure that the economy recovers quickly from the recession. The package includes: speeding up the income tax reductions Congress passed last year as part of EGTRRA; tax refunds to lower- and moderate-income families who did not benefit from the income tax rebates in 2001; providing partial expensing of new investment and reforming the corporate alternative minimum tax. In addition, the Administration supports measures to provide immediate assistance to laid-off workers, both by extending their unemployment benefits and helping them retain their health insurance coverage.

*Monetary Policy:* Beginning in early 2001, the Federal Reserve consistently pursued an easier monetary policy to reinvigorate the unexpectedly weak economy and to offset the shock to confidence from the terrorist attacks of September 11th. The Federal Reserve cut the Federal funds rate by one percentage point in January 2001 and by one-half percentage point in March. In the following months, and especially after September 11th, the Federal Reserve further reduced the Federal funds rate. All told, the funds rate was cut eleven times during 2001, reducing it from 6-½ percent to 1-¾ percent by early December, the lowest it has been since the early 1960s.

Credit markets responded to the monetary easing. Short-term interest rates matched the decline in the funds rate. At the long end of the maturity spectrum,

yields had already declined substantially in late 2000 in anticipation of the Fed's shift in policy, and then fluctuated somewhat during 2001 as prospects for recovery varied. On October 31st, the Treasury announced it was halting sales of the 30-year bond, and the yield on long-term Treasury notes dropped sharply, but within a month yields returned to pre-announcement levels. By January 2002, as the recovery in economic activity appeared close at hand, the yield on the 10-year Treasury note had risen to 5.1 percent, close to the level at which it began 2001. The steeply upward sloping yield curve at the start of 2002 was another signal from credit markets that the economy was about to emerge from recession to recovery.

*The Recession and the Post-September 11th Economy:* The terrorist attacks pushed a weak economy over the edge into an outright contraction. After September 11th, the forces that had been restraining growth since mid-2000 were augmented by temporary disruptions to business travel and tourism and by the temporary shock to confidence that the terrorist attacks had engendered. As a result, real GDP decreased at a 1.3 percent annual rate in the July-September quarter and probably contracted in the October-December quarter as well.<sup>2</sup> Consumer and business confidence plummeted immediately after September 11th. The Conference Board's survey of consumer confidence dropped 26 percent from August to October. When the financial markets reopened following the attacks, there were sharp declines in asset values. On September 21st, when the stock market hit its low point, the S&P 500 was off 12 percent from its close on September 10th; the NASDAQ was down 16 percent.

Clear signs that the recession was taking hold also appeared in the Nation's labor markets. Payrolls began to shrink after the March business cycle peak but the largest job losses followed the September 11th attacks. All in all, 1.1 million jobs were lost last year, with over 943 thousand jobs lost in the last three months of the year. Manufacturing industries, and especially high-tech and other capital goods industries, experienced the largest job losses. But even the job-generating private service sector industries lost nearly 300,000 jobs last year. Initial claims for unemployment insurance surged during the second half of September and well into October. Layoffs accelerated, especially in industries directly affected by the attacks, such as the airlines, hotels, restaurants and car rentals. The unemployment rate jumped from 5.0 percent in September to 5.8 percent by December. For the year as a whole, the unemployment rate averaged 4.8 percent, the highest level since 1997. The weakening labor market last year was also evident in the declines in the labor force participation rate and in the employment-population ratio.

The growing underutilization of physical capital, which began in late 2000, became more pronounced in 2001, especially, after September 11th. By December,

the manufacturing capacity utilization rate was only 73 percent, well off the 82 percent of mid-2000. The operating rate in high-tech industries fell to 60 percent in December, the lowest level for those industries since record-keeping began in the 1960s.

*Signs of Recovery:* In the closing months of 2001, there were tentative signs that the economy was about to emerge from the recession. After hitting bottom on September 21st, the stock market rose sharply and the yield curve steepened. Consumer confidence jumped 10 percent in December, and surveys revealed that consumers' expectations about the future had nearly returned to the levels attained in August.

Despite the shocks to confidence, consumers were still willing to make big-ticket purchases in the fourth quarter. Motor vehicle sales set a record high in the quarter, spurred by zero-percent financing. In past recessions, housing activity contracted sharply while consumer spending usually declined at some point. That pattern was not repeated this time. The considerable stimulus provided by the tax reductions and lower interest rates, and the restoration of confidence following early successes in the war on terrorism, appear to have sustained the household sector through this turbulent period.

Other signs of improvement could be seen in the labor markets, where the number of new claims for unemployment insurance tapered off sharply in November and again in December, while job losses in December were much less than in either October or November. Finally, business capital goods orders rose substantially in October and November, a signal that businesses were again beginning to undertake long-term investment commitments. As 2002 began, most forecasters were projecting that real GDP growth would resume in the first or second quarter of the year.

Nonetheless, a resumption of strong growth later this year is far from assured. The recent recovery of business and consumer confidence is still fragile and could be shattered by any adverse shocks. Job losses in December, although less than a few months earlier, were substantial and the unemployment rate was still on the rise. Faced with uncertainties about job security, consumers may yet cut back on spending as has often occurred in recessions. Businesses may still be reluctant to invest heavily in new plant and equipment. Finally, it may prove difficult for the hard-hit manufacturing sector to pull out of recession given the continuing weakness in U.S. export markets.

### Economic Projections

The Administration's economic projections are summarized in Table 2-1. They assume that the policies proposed in the Budget will be adopted, notably the bipartisan economic security package to insure that the recovery does not falter. The Federal Reserve is assumed to pursue a monetary policy that supports a return to sustainable growth while continuing to keep inflation under control. These economic assumptions are conservative and close to those of the Congressional

<sup>2</sup> The first official estimate of fourth quarter GDP was released at the end of January, after this text was finalized.

Table 2-1. ECONOMIC ASSUMPTIONS <sup>1</sup>

(Calendar years; dollar amounts in billions)

	Actual 2000	Projections											
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Gross Domestic Product (GDP):</b>													
Levels, dollar amounts in billions:													
Current dollars .....	9,873	10,197	10,481	11,073	11,681	12,321	12,962	13,614	14,299	15,020	15,775	16,569	17,404
Real, chained (1996) dollars .....	9,224	9,313	9,382	9,739	10,101	10,462	10,802	11,136	11,482	11,838	12,204	12,583	12,973
Chained price index (1996=100), annual average .....	107.0	109.5	111.7	113.7	115.6	117.8	120.0	122.2	124.5	126.8	129.2	131.6	134.1
Percent change, fourth quarter over fourth quarter:													
Current dollars .....	5.3	1.9	4.7	5.6	5.5	5.4	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Real, chained (1996) dollars .....	2.8	-0.5	2.7	3.8	3.7	3.5	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Chained price index (1996=100) .....	2.4	2.4	1.9	1.7	1.7	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Percent change, year over year:													
Current dollars .....	6.5	3.3	2.8	5.6	5.5	5.5	5.2	5.0	5.0	5.0	5.0	5.0	5.0
Real, chained (1996) dollars .....	4.1	1.0	0.7	3.8	3.7	3.6	3.2	3.1	3.1	3.1	3.1	3.1	3.1
Chained price index (1996=100) .....	2.3	2.3	2.0	1.8	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9
<b>Incomes, billions of current dollars:</b>													
Corporate profits before tax .....	845	706	733	848	931	1,023	1,090	1,136	1,188	1,251	1,312	1,354	1,419
Wages and salaries .....	4,837	5,100	5,246	5,519	5,818	6,115	6,415	6,730	7,058	7,401	7,763	8,147	8,549
Other taxable income <sup>2</sup> .....	2,236	2,297	2,331	2,458	2,547	2,650	2,750	2,839	2,937	3,042	3,152	3,265	3,386
<b>Consumer Price Index (all urban): <sup>3</sup></b>													
Level (1982-84=100), annual average .....	172.3	177.2	180.5	184.5	188.7	193.2	197.8	202.6	207.4	212.4	217.3	222.3	227.4
Percent change, fourth quarter over fourth quarter .....	3.4	2.0	2.4	2.2	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3
Percent change, year over year .....	3.4	2.9	1.8	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3
<b>Unemployment rate, civilian, percent:</b>													
Fourth quarter level .....	4.0	5.5	5.8	5.4	5.1	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Annual average .....	4.0	4.8	5.9	5.5	5.2	5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9
<b>Federal pay raises, January, percent:</b>													
Military <sup>4</sup> .....	4.8	3.7	6.9	4.1	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Civilian <sup>5</sup> .....	4.8	3.7	4.6	2.6	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
<b>Interest rates, percent:</b>													
91-day Treasury bills <sup>6</sup> .....	5.8	3.4	2.2	3.5	4.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
10-year Treasury notes .....	6.0	5.0	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.3	5.3	5.3

<sup>1</sup> Based on information available as of late November 2001.<sup>2</sup> Rent, interest, dividend and proprietor's components of personal income.<sup>3</sup> Seasonally adjusted CPI for all urban consumers.<sup>4</sup> Percentages apply to basic pay only; 2002 figure is average of various rank- and longevity-specific adjustments; adjustments for housing and subsistence allowances will be determined by the Secretary of Defense.<sup>5</sup> Overall average increase, including locality pay adjustments.<sup>6</sup> Average rate, secondary market (bank discount basis).

Budget Office and the consensus of private sector forecasters, as described in more detail below.

There are both upside and downside risks to the assumptions. If the favorable productivity performance since 1995 is maintained in the years ahead real GDP growth may be stronger than assumed here. On the other hand, the recession might prove deeper than expected or the recovery weaker, risks that would increase if Congress again fails to pass the bipartisan economic security package. The Budget assumptions take a balanced view of these risks and are intended to avoid either over- or under-estimation of available budgetary resources.

**Real GDP:** Assuming passage of the bipartisan economic security package, the recession is projected to end early in 2002 and the recovery is expected to be firmly established during the second half of the year. On a calendar year basis, real GDP is projected to rise 0.7 percent in 2002, following a 1.0 percent gain in 2001. Because of the timing of the business cycle, the transition from recession to recovery can be seen more clearly in the fourth-quarter to fourth-quarter

growth rates in Table 2-1, which are -0.5 percent during the recession year of 2001 and 2.7 percent during the recovery year of 2002. Following the usual cyclical pattern, during the early stages of the economic expansion real growth is projected to exceed the long-run sustainable rate. During this period, the unemployment rate is projected to decline until it reaches a sustainable level of 4.9 percent in 2005. From 2006 through 2012, real GDP is projected to increase 3.1 percent per year, and the unemployment rate is projected to remain at 4.9 percent.

The largest contribution to GDP growth in the near-term is expected to come as massive inventory liquidation gives way to renewed accumulation during 2002 as businesses rebuild their depleted inventories. Beyond this year, inventories are likely to grow in line with sales and their contribution to GDP growth is likely to be quite small. After 2002, real growth is expected to be primarily supported by a return to strong growth of business investment, especially in productive high-tech capital, and by the moderate growth of consumer spending. Overall GDP growth, however, is not pro-

jected to return to the very rapid rates experienced in the last half of the 1990s. During those years, a stock market boom contributed to unsustainable growth rates of investment and consumer spending. Residential investment is expected to benefit from relatively low mortgage rates and growing demand for second homes for vacation and retirement. However, underlying demographic trends will make for a relatively moderate growth of homebuilding in the years ahead.

The Federal, State and local government components of GDP are also expected to grow at a moderate pace. Faster growth of Federal spending on security requirements is expected to be coupled with more moderate growth in other spending. State and local government spending is projected to be restrained by lingering fiscal pressures that developed during the recession. During 2002, the foreign sector is likely to exert a drag on real GDP growth. The recovery of world economic growth is expected to be led by the United States, which will tend to increase our imports at a time when our exports will still be hurt by slow growth abroad. In subsequent years, growth in our major trading partners is projected to pick up again and the net export sector will no longer be a source of restraint, and may even make a small contribution to GDP growth.

*Potential GDP:* The growth of potential GDP is assumed to be 3.1 percent per year through 2012. Potential growth is approximately equal to the sum of the trend growth rates of the labor force and productivity. The labor force component is assumed to rise 1.0 percent per year on average.

Potential productivity in the nonfarm business sector is assumed to grow 2.1 percent per year during 2002–2012, which is higher than the 1973–1995 average of 1.4 percent but lower than the 1995–2001 average of 2.4 percent. The assumed growth of potential productivity in the nonfarm business sector is close to the historical averages experienced both over the long-term of 1948–2001 and over the medium-term between the cyclical peaks in 1990 and 2001. The potential productivity trend is assumed to be somewhat below the average productivity growth of the last six years for two reasons:

- First, growth of business investment last year and in the next few years is likely to be somewhat less than experienced during the last half of the 1990s. As a result, there is likely to be a somewhat slower growth of capital per worker.
- Second, the fight against terrorism is likely to slow potential productivity growth as conventionally measured, at least temporarily. Businesses and governments will have to spend tens of billions of dollars to reduce the risks of terrorist attacks and to minimize the damage they might do if they occur. Although this spending will add to the Nation's well-being, much of this spending will not increase measured productivity growth, and could possibly diminish it. After a transition period, however, potential productivity growth is

not likely to be significantly affected by the new security measures.

*Inflation and Unemployment:* Price inflation slowed last year, restrained by falling energy prices and growing slack in labor and capital markets. On a year-over-year basis, the Consumer Price Index (CPI) increased just 2.8 percent in 2001, down from 3.4 percent in 2000. Excluding the volatile food and energy components, the “core” CPI rose 2.7 percent last year, which was slightly higher than the 2.4 percent of 2000.

Over the past year, the consensus of private sector forecasters and the Administration have edged up their estimate of the unemployment rate that is consistent with stable inflation, from 4.6 percent to 4.9 percent. Although there is a wide range of uncertainty surrounding any estimate of the “NAIRU” (the non-accelerating inflation rate of unemployment), the small increase in both the core CPI last year and in average hourly earnings suggest that the NAIRU may be slightly higher than last year's 4.8 percent average unemployment rate. Nonetheless, at 4.9 percent, the NAIRU estimate is still well below the estimates that prevailed just a few years ago, reflecting the experience of recent years that demonstrated that the economy could operate at lower levels of unemployment without experiencing accelerating inflation.

The considerable slack in labor and product markets created by the recession is expected to restrain the growth of wages and prices this year. The unemployment rate is projected to decline steadily beginning in 2002 but still remain above the 4.9 percent NAIRU estimate until 2005, implying progressively lower inflation during these years. The CPI is expected to slow to 2.4 percent by 2006 and then remain at around that level. The GDP chain-weighted price index, which increased 2.3 percent in 2001, is projected to slow to 1.9 percent by 2006 and then stay at that level.

Increases in the CPI tend to be slightly larger than those of the GDP measure of inflation in part because sharply falling computer prices exert less of an impact on the CPI than on the GDP measure. In addition, the CPI uses a fixed market basket for its weights while overall GDP inflation uses a chain-weight system that reflects shifts in buying patterns, generally away from goods and services with increasing relative prices and towards those with decreasing relative prices.

*Interest Rates:* The budget's interest-rate assumptions are based on information as of late November. They project a rise in short-term rates through 2005 because the transition from recession to expansion will increase short-term credit demand. The yield on the 10-year Treasury note is projected to remain at around the 5.1 percent level reached when the assumptions were finalized. This projection assumes that the market price as of that date incorporated all relevant information, including the consensus view that the economy was about to enter an extended period of sustained economic growth.

*Income Shares:* The share of total taxable income in nominal GDP is projected to decline gradually. The

share of wages and salaries is expected to trend lower as the share of nonwage benefits in compensation rises and as the labor compensation share of GDP declines to its longer-term average. The profits share, which fell sharply during the recession, is projected to rise in the initial recovery years, when a cyclical increase in productivity growth is likely to hold down unit costs and boost profit margins.

### Comparison with CBO and Private-Sector Forecasts

The Congressional Budget Office (CBO) and many private-sector forecasters also make projections. The CBO projection is used by Congress in formulating budget policy. In the executive branch, this function is performed jointly by the Treasury, the Council of Economic Advisers, and the Office of Management and Budget. Private-sector forecasts are often used by businesses for long-term planning. Table 2–2 compares the Budget assumptions with projections by the CBO and the Blue Chip consensus, an average of about 50 private forecasts.

The Administration's projections assume that the President's policy proposals in the Budget, including

the economic stimulus package, will be adopted. CBO normally assumes that current law will continue to hold. The private sector forecasts are based on appraisals of the most-likely policy outcomes, which can vary considerably among forecasters. Despite these differences in policy assumptions, the three sets of projections are usually very close for the key economic assumptions. The differences among them are generally well within the normal margin of error for such forecasts. Currently, the three sets of projections agree on the timing of the recovery and envision similar economic conditions during the subsequent expansion.

For real GDP growth, the Administration, CBO and the Blue Chip consensus anticipate that the economy will recover from the 2001 recession in 2002 and grow even faster in 2003. The differences between the Administration's projections in each year and those of the CBO and Blue Chip are quite small. Over the eleven-year span 2002–2012, all three have an identical forecast average of 3.1 percent annual real GDP growth

Table 2–2. COMPARISON OF ECONOMIC ASSUMPTIONS

(Calendar years)

	Projections											Average, 2002–12
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
<b>Real GDP (billions of 1996 dollars):</b>												
CBO January .....	9,398	9,782	10,146	10,471	10,804	11,145	11,493	11,850	12,216	12,590	12,972	.....
Blue Chip Consensus January <sup>2</sup> .....	9,410	9,742	10,069	10,401	10,738	11,075	11,425	11,791	12,168	12,557	12,959	.....
2003 Budget .....	9,382	9,739	10,101	10,462	10,802	11,136	11,482	11,838	12,204	12,583	12,973	.....
<b>Real GDP (chain-weighted):<sup>1</sup></b>												
CBO January .....	0.8	4.1	3.7	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.0	3.1
Blue Chip Consensus January <sup>2</sup> .....	1.0	3.4	3.4	3.3	3.2	3.1	3.2	3.2	3.2	3.2	3.2	3.1
2003 Budget .....	0.7	3.8	3.7	3.6	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1
<b>Chain-weighted GDP Price Index:<sup>1</sup></b>												
CBO January .....	1.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9
Blue Chip Consensus January <sup>2</sup> .....	1.6	1.9	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1
2003 Budget .....	2.0	1.8	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
<b>Consumer Price Index (all-urban):<sup>1</sup></b>												
CBO January .....	1.8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4
Blue Chip Consensus January <sup>2</sup> .....	1.7	2.4	2.6	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.5
2003 Budget .....	1.8	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3
<b>Unemployment rate:<sup>3</sup></b>												
CBO January .....	6.1	5.9	5.4	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.4
Blue Chip Consensus January <sup>2</sup> .....	6.1	5.7	4.9	4.9	4.8	4.9	4.9	4.9	4.9	4.9	4.9	5.1
2003 Budget .....	5.9	5.5	5.2	5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	5.1
<b>Interest rates:<sup>3</sup></b>												
<b>91-day Treasury bills:</b>												
CBO January .....	2.2	4.5	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.6
Blue Chip Consensus January <sup>2</sup> .....	2.1	3.4	4.5	4.7	4.8	4.8	4.7	4.7	4.7	4.7	4.7	4.3
2003 Budget .....	2.2	3.5	4.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.0
<b>10-year Treasury notes:<sup>3</sup></b>												
CBO January .....	5.0	5.4	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.7
Blue Chip Consensus January <sup>2</sup> .....	5.1	5.6	5.7	5.7	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.7
2003 Budget .....	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.3	5.3	5.3	5.2

Sources: Congressional Budget Office; *Blue Chip Economic Indicators*, Aspen Publishers, Inc.

<sup>1</sup> Year over year percent change.

<sup>2</sup> January 2002 Blue Chip Consensus forecast for 2002 and 2003; Blue Chip October 2001 long run extension for 2004–2012.

<sup>3</sup> Annual averages, percent.

and the level of real GDP projected for 2012 is nearly the same in the three forecasts.<sup>3</sup>

All three forecasts anticipate low and stable GDP inflation in the neighborhood of 2 percent annually during the forecast period. The Administration's unemployment rate projection is very close to the Blue Chip's while CBO's projected unemployment rate is somewhat above the other two forecasts. In the outyears, the Administration and the Blue Chip project a 4.9 percent rate; CBO projects 5.2 percent. All three forecasts have similar interest rate projections for 2002, and foresee a rise in short-term interest rates in 2003 as the expansion gathers momentum. CBO projects a somewhat sharper rise in 2003 than the other two forecasts. During the outyears, the Blue Chip and CBO short-term projections are similar and slightly above those of the Administration. The Administration also projects somewhat less of an increase in long-term rates than the other two forecasts.

### Changes in Economic Assumptions

As shown in Table 2–3, the economic assumptions underlying this Budget have been revised from those of the 2002 Budget to reflect unanticipated cyclical developments and the implications of the terrorist attacks. The current projection of real GDP growth has a pronounced cyclical swing that takes into account the recession during 2001 and the likely pick-up in activity in the recovery and expansion phases of the

business cycle. On a year-over-year basis, real GDP growth is considerably slower in 2001 and 2002 than projected in the prior Budget assumptions and faster during 2003–2006. From 2007 onwards, however, real GDP growth in this and the prior Budget is projected to be 3.1 percent yearly, the same as the estimate of potential GDP growth during those years. Consistent with the near-term increase in unemployment and the lower level of interest rates at the end of 2001, inflation and interest rates are projected to be lower than in the previous Budget.

Primarily because growth during the initial years of the expansion is not expected to be as high as the 4 percent or more rate that has occurred in past recoveries, during 2001–2005 real GDP growth is now expected to average 0.5 percentage point less per year than previously projected. Consequently, as shown in the table, the level of real GDP is projected to be lower in each year than forecast in last year's assumptions, and from 2006 onward the level of real GDP is now projected to be about 2 percent lower than envisaged in last year's Budget assumptions.

Over the past year, the CBO and the Blue Chip have made similar reductions in their estimate of average growth during 2001–2011 and, as a result, have also lowered their estimate of the level of real GDP in 2011 by an amount similar to that in the Budget assumptions. Thus, the consensus view is that this cycle of recession and expansion is likely to be different from those of the past when the level of real GDP eventually returned to the pre-recession trend. As explained below,

**Table 2–3. COMPARISON OF ECONOMIC ASSUMPTIONS IN THE 2002 AND 2003 BUDGETS**

(Calendar years; dollar amounts in billions)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>Nominal GDP:</b>											
2002 <sup>1</sup> .....	10,328	10,892	11,478	12,094	12,736	13,413	14,125	14,871	15,657	16,481	17,347
2003 .....	10,197	10,481	11,073	11,681	12,321	12,962	13,614	14,299	15,020	15,775	16,569
<b>Real GDP (1996 dollars):</b>											
2002 <sup>1</sup> .....	9,440	9,752	10,065	10,387	10,714	11,050	11,397	11,756	12,121	12,494	12,879
2003 .....	9,313	9,382	9,739	10,101	10,462	10,802	11,136	11,482	11,838	12,204	12,583
<b>Real GDP (percent change):<sup>2</sup></b>											
2002 .....	2.3	3.3	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1
2003 .....	1.0	0.7	3.8	3.7	3.6	3.2	3.1	3.1	3.1	3.1	3.1
<b>GDP price index (percent change):<sup>2</sup></b>											
2002 .....	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
2003 .....	2.3	2.0	1.8	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9
<b>Consumer Price Index (percent change):<sup>2</sup></b>											
2002 .....	2.7	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2003 .....	2.9	1.8	2.2	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3
<b>Civilian unemployment rate (percent):<sup>3</sup></b>											
2002 .....	4.4	4.6	4.5	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.6
2003 .....	4.8	5.9	5.5	5.2	5.0	4.9	4.9	4.9	4.9	4.9	4.9
<b>91-day Treasury bill rate (percent):<sup>3</sup></b>											
2002 .....	5.3	5.6	5.6	5.6	5.3	5.0	5.0	5.0	5.0	5.0	5.0
2003 .....	3.4	2.2	3.5	4.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3
<b>10-year Treasury note rate (percent):<sup>3</sup></b>											
2002 .....	5.4	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
2003 .....	5.0	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.3	5.3

<sup>1</sup> Adjusted for July 2001 NIPA revisions.

<sup>2</sup> Year over year.

<sup>3</sup> Calendar year average.

the unusual nature of this business cycle implies substantially lower projected budget surpluses, even when the economy returns to its potential growth rate.

The slower average real GDP growth rate for the forecast period, and the resulting lower level of real GDP, primarily reflects three factors:

- First, the overhang of capital that developed unexpectedly during 2001 has resulted in lower actual business investment during 2001 and slower growth of investment for the next few years than projected in the 2002 Budget assumptions. As a result, productivity growth for the next few years is projected to be somewhat slower because of the slower growth of capital per worker.
- Second, in the aftermath of the September 11th terrorist attacks, resources which might have been invested in expanding productive capacity will be diverted to enhance security. This diversion will slow productivity growth and real GDP growth slightly for the next few years.
- Finally, the Administration's estimate of the long-run sustainable level of the unemployment rate has been revised up modestly from 4.6 percent to 4.9 percent, as has the Blue Chip's, which implies a lower level of real GDP for the largely unchanged projected labor force.

### **Sources of Change in the Budget Since Last Year**

The sources of the change in the budget outlook from the 2002 Budget pre-policy *baseline* to the 2003 Budget *policy* projection are shown in Table 2–4. The second block shows that enacted legislation reduced the projected pre-policy surpluses of \$5.6 trillion during 2002–2011 by \$2.1 trillion.

The third and fourth blocks quantify the impact on the budget outlook from changes in the economic assumptions and technical factors. Technical factors are those changes that are not due to explicit economic assumptions or legislation, such as income from stock options and the effective tax rate on corporate profits. Because of the interaction of economic developments and technical factors, it is difficult to estimate accurately their separate budgetary impacts. Block 5 shows that the combined changes due to economic and technical factors reduced projected surpluses by \$1,345 billion. The Addendum shows that the lower projected level of real GDP in each year accounted for \$851 billion of the reduced surpluses. Block 6 shows that policies proposed in this Budget are expected to reduce cumulative surpluses by \$1,556 billion. Block 7 shows the resulting 2003 Budget policy surplus projection.

### **Structural and Cyclical Balances**

When the economy is operating below potential and the unemployment rate exceeds the long-run sustainable average, as is projected to be the case for the next few years, receipts are lower than they would be if resources were more fully employed, and outlays for unemployment-sensitive programs (such as unemploy-

ment compensation and food stamps) are higher. As a result, the surplus is smaller, (or the deficit larger) than would be the case if unemployment were at the sustainable long-run average. The portion of the surplus (or deficit) that can be traced to this factor is called the cyclical component. The balance is the portion that would remain if the unemployment rate were at its long-run value, which is called the structural surplus (or structural deficit).

Compared to the actual, unadjusted surplus or deficit, the structural balance gives a clearer picture of the stance of fiscal policy because this part of the surplus or deficit will persist even when the economy is operating at the sustainable level of unemployment. For this reason, changes in the structural balance give a better picture of the independent impact of budget policy on the economy than does the unadjusted budget balance, which reflects the combined impact of policy and cyclical economic conditions on the budget.

From 1997 to 2001, unemployment was lower than could be expected to persist in the long run. Therefore, as shown in Table 2–5, in 1997 the structural deficit exceeded the actual unadjusted deficit and in 1998–2001 the structural surplus was smaller than the actual unadjusted structural surplus. In 2002, when the unemployment rate is projected to be above the sustainable level, the actual deficit is projected to be \$106 billion at a time when the structural deficit is expected to be \$18 billion. Beginning in 2006, the unadjusted and the structural surplus are about equal because the unemployment rate is projected to be at its sustainable level.

In the early 1990s, large swings in net outlays for deposit insurance (the S&L bailouts) had substantial impacts on deficits, but had little concurrent impact on economic performance. It therefore became customary to remove deposit insurance outlays as well as the cyclical component of the surplus or deficit from the actual surplus or deficit to compute the adjusted structural balance. Deposit insurance net outlays are projected to be very small in the coming years. Therefore, the adjusted structural surplus and the unadjusted structural surplus are nearly identical during the forecast horizon.

### **Sensitivity of the Budget to Economic Assumptions**

Both receipts and outlays are affected by changes in economic conditions. This sensitivity complicates budget planning because errors in economic assumptions lead to errors in the budget projections. It is therefore useful to examine the implications of alternative economic assumptions. Many of the budgetary effects of changes in economic assumptions are fairly predictable, and a set of rules of thumb embodying these relationships can aid in estimating how changes in the economic assumptions would alter outlays, receipts, and the surplus or deficit.

Economic variables that affect the budget do not usually change independently of one another. Output and

Table 2-4. SOURCES OF CHANGE IN BUDGET TOTALS

(In billions of dollars)

	2002	2003	2004	2005	2006	2007	2002-2011
<b>(1) 2002 Budget baseline</b>							
Receipts .....	2,221	2,324	2,438	2,569	2,698	2,836	
Outlays .....	1,938	1,991	2,051	2,130	2,182	2,250	
Unified budget surplus .....	283	334	387	439	515	585	5,637
<b>(2) Changes due to enacted legislation:</b>							
Receipts .....	-33	-83	-104	-102	-126	-137	-1,127
Outlays .....	61	62	70	76	86	95	943
Surplus reduction (-), enacted legislation .....	-95	-145	-174	-179	-212	-232	-2,070
<b>(3) Changes due to economic assumptions:</b>							
Receipts .....	-82	-91	-81	-87	-100	-109	-1,077
Outlays .....	-7	-15	-13	-12	-11	-8	-63
Surplus reduction (-), economic .....	-76	-76	-67	-75	-89	-101	-1,014
<b>(4) Changes due to technical factors:</b>							
Receipts .....	-94	-29	-19	-14	-10	-9	-197
Outlays .....	27	32	18	3	8	3	135
Surplus reduction (-), technical .....	-121	-61	-37	-17	-19	-12	-331
<b>(5) Surplus reduction, economic and technical subtotal .....</b>	<b>-197</b>	<b>-138</b>	<b>-104</b>	<b>-92</b>	<b>-108</b>	<b>-114</b>	<b>-1,345</b>
<b>(6) Changes due to 2003 Budget policy:</b>							
Receipts .....	-65	-73	-59	-28	-6	-9	-414
Outlays .....	32	59	63	80	103	126	1,143
Surplus reduction (-), policy .....	-97	-132	-122	-108	-110	-136	-1,556
<b>(7) 2003 Budget totals (policy)</b>							
Receipts .....	1,946	2,048	2,175	2,338	2,455	2,572	
Outlays .....	2,052	2,128	2,189	2,277	2,369	2,468	
Unified budget surplus .....	-106	-80	-14	61	86	104	665
<b>Addendum:</b>							
<b>Surplus Reduction due to Change in Economic Assumptions:</b>							
Lower Real GDP .....	-70	-85	-79	-75	-75	-80	-851
Higher Unemployment .....	-16	-7	-4	-3	-4	-6	-64
Lower Inflation .....	-1	-1	-2	-6	-10	-15	-159
All Other .....	11	16	18	9	-1	-1	60
Surplus reduction (-), economic .....	-76	-76	-67	-75	-89	-101	-1,014

Note: Changes in interest costs due to receipts changes included in outlay lines.

employment tend to move together in the short run: a high rate of real GDP growth is generally associated with a declining rate of unemployment, while moderate or negative growth is usually accompanied by rising unemployment. In the long run, however, changes in the average rate of growth of real GDP are mainly due to changes in the rates of growth of productivity and labor force, and are not necessarily associated with changes in the average rate of unemployment. Inflation and interest rates are also closely interrelated: a higher expected rate of inflation increases interest rates, while lower expected inflation reduces rates.

Changes in real GDP growth or inflation have a much greater cumulative effect on the budget over time if they are sustained for several years than if they last for only one year.

Highlights of the budgetary effects of the above rules of thumb are shown in Table 2-6.

For real growth and employment:

- As shown in the first block, if real GDP growth is lower by one percentage point in calendar year 2002 only and the unemployment rate rises by one-half percentage point more than in the budget assumptions, the fiscal year 2002 deficit is estimated to increase by \$11.5 billion; receipts in 2002 would be lower by \$9.3 billion, and outlays would be higher by \$2.1 billion, primarily for unemployment-sensitive programs. In fiscal year 2003, the estimated receipts shortfall would grow further to \$19.3 billion, and outlays would increase by \$7.1 billion relative to the base, even though the growth rate in calendar 2003 equaled the rate originally assumed. This is because the level of real (and nominal) GDP and taxable incomes would be permanently lower, and unemployment permanently higher. The budget effects (including

Table 2-5. ADJUSTED STRUCTURAL BALANCE

(In billions of dollars)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Unadjusted surplus or deficit (-) .....	-107.5	-22.0	69.2	124.6	236.4	127.1	-106.2	-80.2	-13.7	61.1	86.2	104.0
Cyclical component .....	-13.7	15.5	45.3	64.3	81.9	42.1	-88.0	-77.5	-45.5	-17.5	-0.5	0.0
Structural surplus or deficit (-) .....	-91.5	-27.9	35.7	79.8	164.4	85.0	-18.2	-2.7	31.7	78.7	86.7	104.0
Deposit insurance outlays .....	-8.4	-14.4	-4.4	-5.3	-3.1	-1.4	0.2	1.4	0.4	-0.2	-0.3	-0.4
Adjusted structural surplus or deficit (-) .....	-99.9	-42.3	31.3	74.5	161.3	83.5	-17.9	-1.3	32.1	78.5	86.4	103.6

NOTE: The NAIRU is assumed to be 5.2% through calendar year 1998 and 4.9% thereafter.

growing interest costs associated with smaller surpluses) would continue to grow slightly in each successive year. During 2003–2012, the cumulative reduction in the budget surplus is estimated to be \$394 billion.

- The budgetary effects are much larger if the real growth rate is one percentage point lower in each year than initially assumed and the unemployment rate is unchanged, as shown in the second block. This scenario might occur if trend productivity is permanently lower than initially assumed. In this case, the estimated reduction in the surplus is much larger than in the first scenario. In this example, during 2003–2012, the cumulative reduction in the budget surplus is estimated to be \$1.9 trillion.

Joint changes in interest rates and inflation have a smaller effect on the surplus than equal percentage point changes in real GDP growth.

- The third block shows the effect of a one percentage point higher rate of inflation and one percentage point higher interest rates during calendar year 2002 only. In subsequent years, the price level and nominal GDP would be one percent higher than in the base case, but interest rates are assumed to return to their base levels. In 2003, outlays would be above the base by \$16.4 billion, due in part to lagged cost-of-living adjustments; receipts would rise \$21.4 billion above the base, however, resulting in an \$5.1 billion improvement in the budget balance. In subsequent years, the amounts added to receipts would continue to be larger than the additions to outlays. During 2003–2012, cumulative budget surpluses would be \$106 billion larger than in the base case.
- In the fourth block example, the rate of inflation and the level of interest rates are higher by one percentage point in all years. As a result, the price level and nominal GDP rise by a cumulatively growing percentage above their base levels. In this

case, the effects on receipts and outlays mount steadily in successive years, adding \$775 billion to outlays over 2003–2012 and \$1,559 billion to receipts, for a net increase in the 2003–2012 surpluses of \$784 billion. This rule-of-thumb now shows a more positive net budget outcome than was estimated a few years ago, when the interest outlays were larger because of higher levels of public debt.

The table also shows the interest rate and the inflation effects separately. These separate effects for interest rates and inflation rates do not sum to the effects for simultaneous changes in both. This occurs in part because the combined effects of two changes in assumptions affecting debt financing patterns and interest costs may differ from the sum of the separate effects.

- The outlay effects of a one percentage point increase in interest rates alone is now relatively small, as shown in the fifth block. The receipts portion of this rule-of-thumb is due to the Federal Reserve's deposit of earnings on its securities portfolio.
- The sixth block shows that a sustained one percentage point increase in the GDP chain-weighted price index and in CPI inflation increase cumulative surpluses by a substantial \$962 billion during 2003–2012. This large effect is because the receipts from a higher tax base exceeds the combination of higher outlays from mandatory cost-of-living adjustments and lower receipts from CPI indexation of tax brackets.

The last entry in the table shows rules of thumb for the added interest cost associated with changes in the budget surplus or deficit.

The effects of changes in economic assumptions in the opposite direction are approximately symmetric to those shown in the table. The impact of a one percentage point lower rate of inflation or higher real growth would have about the same magnitude as the effects shown in the table, but with the opposite sign.

Table 2-6. SENSITIVITY OF THE BUDGET TO ECONOMIC ASSUMPTIONS

(In billions of dollars)

Budget effect	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2003-2012
<b>Real Growth and Employment</b>												
<b>Budgetary effects of 1 percent lower real GDP growth:</b>												
(1) For calendar year 2002 only: <sup>1</sup>												
Receipts .....	-9.3	-19.3	-21.3	-22.3	-23.1	-24.1	-25.4	-26.7	-28.0	-29.3	-30.9	-250.4
Outlays .....	2.1	7.1	7.4	9.1	11.0	13.0	14.9	16.8	19.0	21.4	24.0	143.7
Decrease in surplus (-) .....	-11.5	-26.5	-28.7	-31.4	-34.2	-37.1	-40.2	-43.5	-47.1	-50.7	-54.8	-394.1
(2) Sustained during 2002-2012, with no change in unemployment:												
Receipts .....	-9.4	-29.9	-54.7	-82.0	-110.4	-141.5	-175.1	-211.8	-251.1	-292.4	-338.2	-1,687.1
Outlays .....	-*	0.3	1.9	4.6	8.4	13.4	19.4	26.4	35.3	45.9	58.4	214.0
Decrease in surplus (-) .....	-9.4	-30.2	-56.6	-86.6	-118.8	-154.9	-194.5	-238.2	-286.4	-338.3	-396.6	-1,901.1
<b>Inflation and Interest Rates</b>												
<b>Budgetary effects of 1 percentage point higher rate of:</b>												
(3) Inflation and interest rates during calendar year 2002 only:												
Receipts .....	10.6	21.4	20.9	19.3	20.1	21.1	22.3	23.6	24.9	26.3	28.1	228.0
Outlays .....	8.4	16.4	14.4	12.2	11.8	11.3	11.0	11.1	11.2	11.4	11.2	121.8
Increase in surplus (+) .....	2.2	5.1	6.4	7.1	8.3	9.8	11.3	12.5	13.7	15.0	16.9	106.2
(4) Inflation and interest rates, sustained during 2002-2012:												
Receipts .....	10.6	32.7	55.4	77.9	101.8	128.5	158.2	191.6	228.3	268.6	315.6	1,558.7
Outlays .....	8.3	24.4	37.9	49.9	61.0	71.8	83.0	94.4	106.0	118.3	128.2	774.8
Increase in surplus (+) .....	2.3	8.3	17.5	28.0	40.8	56.7	75.3	97.2	122.3	150.4	187.4	783.9
(5) Interest rates only, sustained during 2002-2012:												
Receipts .....	1.4	3.7	4.7	5.2	5.6	6.0	6.4	6.8	7.2	7.6	8.0	61.1
Outlays .....	6.8	17.0	22.9	26.1	28.1	29.6	30.5	31.2	31.5	31.4	30.8	279.1
Decrease in surplus (-) .....	-5.4	-13.3	-18.2	-20.9	-22.5	-23.6	-24.1	-24.3	-24.3	-23.9	-22.8	-217.9
(6) Inflation only, sustained during 2002-2012:												
Receipts .....	9.2	29.0	50.7	72.8	96.2	122.5	151.8	184.8	221.1	261.0	307.6	1,497.6
Outlays .....	1.5	7.6	15.5	24.8	34.6	44.7	56.0	68.0	80.9	95.2	108.2	535.6
Increase in surplus (+) .....	7.7	21.4	35.2	47.9	61.6	77.8	95.8	116.8	140.2	165.8	199.4	962.0
<b>Interest Cost of Higher Federal Borrowing</b>												
(7) Outlay effect of \$100 billion increase in the 2002 unified deficit .....	1.3	3.5	4.4	4.9	5.2	5.5	5.7	5.9	6.2	6.5	6.8	54.8

\* \$50 million or less.

<sup>1</sup> The unemployment rate is assumed to be 0.5 percentage point higher per 1.0 percent shortfall in the level of real GDP.